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## EDUCATION

**Postdoctoral scholar. Civil Engineering (Environmental).** Stanford University, Stanford, CA.

**Ph.D. Civil Engineering (Environmental).** Stanford University, Stanford, CA. 1995.

**M.S. Chemical Oceanography.** Oregon State University, Corvallis, OR. 1985.

**B.A. Environmental Science.** Wesleyan University, Middletown, CT. 1981.

Summer workshop (1992): *The application of techniques of molecular biology to studies of microbial ecology*. Gray Freshwater Biological Institute, University of Minnesota, Navarre, MN.

## PROFESSIONAL EXPERIENCE

12/11 - present	Senior Scientist, Lawrence Berkeley National Laboratory
10/07 - present	Director, Biofuels Final Pathways, DOE Joint BioEnergy Institute (JBEI)
4/09 - present	Adjunct Professor, Department of Chemical Engineering and Applied Chemistry, University of Toronto
9/07 - 12/11	Staff Scientist, Lawrence Berkeley National Laboratory
4/03 – 4/09	Adjunct Associate Professor, Department of Chemical Engineering and Applied Chemistry, University of Toronto
12/08; 7/04	Guest lecturer, Environmental Microbiology, Stanford University
11/98 – 8/07	Senior Environmental Scientist, Lawrence Livermore National Laboratory
6/95 – 11/98	Postdoctoral Scholar, Dept. of Civil Engineering, Stanford University
7/89 – 6/95	Research Assistant, Dept. of Civil Engineering, Stanford University
Summer 1993	Teaching Assistant, Dept. of Civil Engineering, Stanford University
8/87 – 6/89	Senior Environmental Chemist, PTI Environmental Services (Bellevue, WA)
6/85 – 8/87	Environmental Chemist, Tetra Tech, Inc. (Bellevue, WA)
8/82 – 6/85	Research Assistant, College of Oceanic and Atmospheric Sciences, Oregon State University

## AWARDS AND HONORS

- Editorial Board of *Applied and Environmental Microbiology* (2007-present).
- Included in *Who's Who in America* (Marquis) 59th and 60th Editions (2005, 2006).
- Executive Committee, UC Toxic Substances Research & Teaching Program, 2006 - 2007.
- Nominated for Edward Teller Fellowship at LLNL by an Associate Director (2007).
- Member of Sigma Xi, The Scientific Research Society
- Recognition award, LLNL Environmental Protection Department, December 2003
- Editors' Citation for Excellence in Refereeing, *Water Resources Research* (AGU). 1997.
- American Chemical Society award for Graduate Students in Environmental Chemistry. 1994.
- Switzer Foundation Environmental Fellow. 1991/2.

## PROFESSIONAL ORGANIZATIONS

American Society for Microbiology  
American Chemical Society  
American Geophysical Union

## PEER-REVIEWED PUBLICATIONS

Han, R., L. Qin, S. T. Brown, J. N. Christensen, **H. R. Beller**. 2012. Differential isotopic fractionation during Cr(VI) reduction under aerobic versus denitrifying conditions by an aquifer-derived bacterium. *Appl. Environ. Microbiol.* **78**:2462-2464.

Goh, E.-B., E. E. K. Baidoo, J. D. Keasling, and **H. R. Beller**. 2012. Engineering of bacterial methyl ketone synthesis for biofuels. *Appl. Environ. Microbiol.* **78**:70-80.

**Beller, H. R.**, E.-B. Goh, and J. D. Keasling. 2011. Definitive alkene identification needed for *in vitro* studies with Ole (olefin synthesis) proteins. *Journal of Biological Chemistry* **286**(26):le11.

Chhabra, S. R., G. Butland, D. Elias, J-M. Chandonia, O-Y Fok, T. Juba, A. Gorur, S. Allen, C.M. Leung, K. Keller, S. Reveco, G. Zane, E. Semkiw, R. Prathapam, B. Gold, M. Singer, M. Ouellet, D. Sazakal, D. Jorgens, M.N. Price, E. Witkowska, **H. R. Beller**, A.P. Arkin, T.C. Hazen, M.D. Biggin, M. Auer, J.D. Wall, and J. D. Keasling. 2011. Generalized schemes for high-throughput manipulation of the *Desulfovibrio vulgaris* genome. *Appl. Environ. Microbiol.* **77**:7595-7604.

DeAngelis, K. M., C. H. Wu, **H. R. Beller** et al. 2011. PCR amplification-independent methods for detection of microbial communities by the high-density microarray PhyloChip. *Appl. Environ. Microbiol.* **77**: 6313 - 6322.

**Beller, H. R.**, T. C. Legler, and S. R. Kane. (In press, book chapter). "Genetic manipulation of the obligate chemolithoautotrophic bacterium *Thiobacillus denitrificans*", In *Microbial Systems Biology: Methods and Protocols* [Methods in Molecular Biology series], Humana Press.

Han, R., J. T. Geller, L. Yang, E. L. Brodie, R. Chakraborty, J. T. Larsen, and **H. R. Beller**. 2010. Physiological and transcriptional studies of Cr(VI) reduction under aerobic and denitrifying conditions by an aquifer-derived pseudomonad. *Environ. Sci. Technol.* **44**:7491-7497.

**Beller, H. R.**, E.-B. Goh, and J. D. Keasling. 2010. Genes involved in long-chain alkene biosynthesis in *Micrococcus luteus*. *Appl. Environ. Microbiol.* **76**:1212-1223.

Young, M., V. Artsatbanov, **H. R. Beller**, et al. 2010. Genome sequence of the Fleming strain of *Micrococcus luteus*, a simple free-living actinobacterium. *J. Bacteriol.* **192**:841-860.

**Beller, H. R.**, T. C. Legler, F. Bourguet, T. E. Letain, S. R. Kane, and M. A. Coleman. 2009. Identification of c-type cytochromes involved in anaerobic, bacterial U(IV) oxidation. *Biodegradation* **20**:45-53.

**Beller, H. R.**, S. R. Kane, T. C. Legler, J. R. McKelvie, B. Sherwood Lollar, F. Pearson, L. Balser, and D. M. Mackay. 2008. Comparative assessments of benzene, toluene, and xylene natural attenuation by quantitative polymerase chain reaction analysis of a catabolic gene, signature metabolites, and compound-specific isotope analysis. *Environ. Sci. Technol.* **42**:6065-6072.

Kunapuli, U., C. Griebler, **H. R. Beller**, and R. U. Meckenstock. 2008. Identification of intermediates formed during anaerobic benzene degradation by an iron-reducing enrichment culture. *Environmental Microbiology* **10**:1703-1712.

Letain, T. E., S. R. Kane, T. C. Legler, E. P. Salazar, P. G. Agron, and **H. R. Beller**. 2007. Development of a genetic system for the chemolithoautotrophic bacterium *Thiobacillus denitrificans*. *Appl. Environ. Microbiol.* **73**:3265-3271.

**Beller, H. R.**, T. E. Letain, A. Chakicherla, S. R. Kane, T. C. Legler, and M. A. Coleman. 2006. Whole-genome transcriptional analysis of chemolithoautotrophic thiosulfate oxidation by *Thiobacillus denitrificans* under aerobic vs. denitrifying conditions. *J. Bacteriol.* **188**:7005-7015.

**Beller, H. R.**, P. S. G. Chain, T. E. Letain, A. Chakicherla, F. W. Larimer, P. M. Richardson, M. A. Coleman, A. P. Wood, and D. P. Kelly. 2006. The genome sequence of the obligately chemolithoautotrophic, facultatively anaerobic bacterium *Thiobacillus denitrificans*. *J. Bacteriol.* **188**:1473-1488.

**Beller, H. R.** 2005. Anaerobic, nitrate-dependent oxidation of U(IV) oxide minerals by the chemolithoautotrophic bacterium *Thiobacillus denitrificans*. *Appl. Environ. Microbiol.* **71**:2170-2174.

McKelvie, J. R., J. E. Lindstrom, **H. R. Beller**, S. A. Richmond, and B. Sherwood Lollar. 2005. Analysis of anaerobic BTX biodegradation in a subarctic aquifer using isotopes and benzylsuccinates. *Journal of Contaminant Hydrology* **81**:167-186.

Ulrich, A. C., **H. R. Beller**, and E. A. Edwards. 2005. Metabolites detected during biodegradation of  $^{13}\text{C}_6$ -benzene in nitrate-reducing and methanogenic enrichment cultures. *Environ. Sci. Technol.* **39**:6681-6691.

**Beller, H. R.**, V. Madrid, G. B. Hudson, W. W. McNab, and T. Carlsen. 2004. Biogeochemistry and natural attenuation of nitrate in groundwater at an explosives test facility. *Applied Geochemistry* **19**:1483-1494.

**Beller, H. R.**, S. R. Kane, T. C. Legler, and P. J. J. Alvarez. 2002. A real-time polymerase chain reaction method for monitoring anaerobic, hydrocarbon-degrading bacteria based on a catabolic gene. *Environ. Sci. Technol.* **36**:3977-3984.

**Beller, H. R.** 2002. Anaerobic biotransformation of RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine) by aquifer bacteria using hydrogen as the sole electron donor. *Water Research* **36**: 2533-2540.

**Beller, H. R.**, and K. Tiemeier. 2002. Use of liquid chromatography/tandem mass spectrometry to detect distinctive indicators of *in situ* RDX transformation in contaminated groundwater. *Environ. Sci. Technol.* **36**: 2060-2066.

**Beller, H. R.** 2002. Analysis of benzylsuccinates in groundwater by liquid chromatography/tandem mass spectrometry and its use for monitoring *in situ* BTEX biodegradation. *Environ. Sci. Technol.* **36**: 2724-2728.

- Kane, S. R., **H. R. Beller**, T. C. Legler, and R. T. Anderson. 2002. Biochemical and genetic evidence of benzylsuccinate synthase in toluene-degrading, ferric iron-reducing *Geobacter metallireducens*. *Biodegradation* **13**: 149-154.
- Reusser, D. E., J. D. Istok, **H. R. Beller**, and J. A. Field. 2002. *In situ* transformation of deuterated toluene and xylene to benzylsuccinic acid analogs in BTEX-contaminated aquifers. *Environ. Sci. Technol.* **36**: 4127-4134.
- Beller, H. R.** 2000. Metabolic indicators for detecting *in situ* anaerobic alkylbenzene degradation. *Biodegradation* **11**: 125-139.
- Beller, H. R.**, and E. A. Edwards. 2000. Anaerobic toluene activation by benzylsuccinate synthase in a highly enriched methanogenic culture. *Appl. Environ. Microbiol.* **66**: 5503-5505.
- Kane, S. R., **H. R. Beller**, T. C. Legler, C. J. Koester, H. C. Pinkart, R.U. Halden, A.M. Happel. 2001. Aerobic biodegradation of methyl *tert*-butyl ether by aquifer bacteria from leaking underground storage tank sites. *Appl. Environ. Microbiol.* **67**: 5824-5829.
- Koester, C. J., **H. R. Beller**, and R. U. Halden. 2000. Analysis of perchlorate in groundwater by electrospray ionization mass spectrometry/mass spectrometry. *Environ. Sci. Technol.* **34**: 1862-1864.
- Beller, H. R.**, and A. M. Spormann. 1999. Substrate range of benzylsuccinate synthase from *Azoarcus* sp. strain T. *FEMS Microbiol. Letters* **178**: 147-153.
- Krieger, C. J., **H. R. Beller**, M. Reinhard, and A. M. Spormann. 1999. Initial reactions in anaerobic oxidation of *m*-xylene by the denitrifying bacterium *Azoarcus* sp. strain T. *J. Bacteriol.* **181**: 6403-6410.
- Heider, J., A. M. Spormann, **H. R. Beller**, and F. Widdel. 1998. Anaerobic bacterial metabolism of hydrocarbons. *FEMS Microbiol. Reviews* **22**: 459-473.
- Beller, H. R.**, and A. M. Spormann. 1998. Analysis of the novel benzylsuccinate synthase reaction for anaerobic toluene activation based on structural studies of the product. *J. Bacteriol.* **180**: 5454-5457.
- Beller, H. R.**, and A. M. Spormann. 1997. Benzylsuccinate formation as a means of anaerobic toluene activation by sulfate-reducing strain PRTOL1. *Appl. Environ. Microbiol.* **63**: 3729-3731.
- Beller, H. R.**, and A. M. Spormann. 1997. Anaerobic activation of toluene and *o*-xylene by addition to fumarate in denitrifying strain T. *J. Bacteriol.* **179**: 670-676.
- Beller, H. R.**, A. M. Spormann, P. K. Sharma, J. R. Cole, and M. Reinhard. 1996. Isolation and characterization of a novel toluene-degrading, sulfate-reducing bacterium. *Appl. Environ. Microbiol.* **62**: 1188-1196.
- Beller, H. R.**, W.-H. Ding, and M. Reinhard. 1995. Byproducts of anaerobic alkylbenzene metabolism useful as indicators of *in situ* bioremediation. *Environ. Sci. Technol.* **29**: 2864-2870.
- Beller, H. R.**, and M. Reinhard. 1995. The role of iron in enhancing anaerobic toluene degradation in sulfate-reducing enrichment cultures. *Microb. Ecol.* **30**: 105-114.
- Beller, H. R.**, M. Reinhard, and D. Grbic-Galic. 1992. Metabolic by-products of anaerobic toluene degradation by sulfate-reducing enrichment cultures. *Appl. Environ. Microbiol.* **58**: 3192-3195.

**Beller, H. R.**, D. Grbic-Galic, and M. Reinhard. 1992. Microbial degradation of toluene under sulfate-reducing conditions and the influence of iron on the process. *Appl. Environ. Microbiol.* **58**:786-793.

**Beller, H. R.**, E. A. Edwards, D. Grbic-Galic, and M. Reinhard. 1991. Microbial degradation of alkylbenzenes under sulfate-reducing and methanogenic conditions. EPA/600/2-91/027. Final Report prepared for U.S. Environmental Protection Agency. National Technical Information Service (publication #PB91-212324), Springfield, VA.

**Beller, H. R.**, and B. R. T. Simoneit. 1988. Hexachlorophene distributions in estuarine sediments. *Bull. Environ. Contam. Toxicol.* **41**:645-650.

**Beller, H. R.**, and B. R. T. Simoneit. 1986. "Polychlorinated biphenyls and hydrocarbons: distributions among bound and unbound lipid fractions of estuarine sediments," pp. 198-214. In: *Organic Marine Geochemistry*. M.L. Sohn (ed). ACS Symposium Series No. 305, American Chemical Society, Washington, DC.

Simoneit, B. R. T., and **H. R. Beller**. 1987. "Lipid geochemistry of Cretaceous/Tertiary boundary sediments, Hole 605, Deep Sea Drilling Project Leg 93, and Stevns Klint, Denmark," pp. 1211-1221. In: *Initial Reports of the Deep Sea Drilling Project*, Vol. 93, pt. 2. J.E. van Hinte, S. W. Wise, Jr., et al. (eds). U.S. Government Printing Office, Washington, DC.

Simoneit, B. R. T., and **H. R. Beller**. 1985. "Lipid geochemistry of the Cretaceous/Tertiary boundary sediments, Hole 577, Deep Sea Drilling Project Leg 86," pp. 671-674. In: *Initial Reports of the Deep Sea Drilling Project*, Vol. 86. G.R. Heath, L.H. Burckle, et al. (eds). U.S. Government Printing Office, Washington, DC.